Focus on International Joint Commission Activities

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FOCUS
On International Joint Commission Activities

Governments Ask for a New IJC Study of Great Lakes Water Levels

by Geoffrey Thornburn

As a result of the continuing high water levels on the Great Lakes, the Governments of Canada and the United States have asked the IJC to examine and report on ways to alleviate the adverse consequences of fluctuating water levels, in terms of both the immediate high level crisis and the long-term consequences. Record high levels are continuing throughout most of the Great Lakes basin, except on Lake Ontario. While levels are expected to stay below recorded maximums on Lake Ontario and Lake Superior, levels on these lakes will remain high if extreme water supplies continue.

The Governments specifically asked the IJC in their August 1, 1986 letter to:

- propose and evaluate measures that Governments could take in crisis conditions to alleviate problems caused by high and low levels;
- review and revise previous lake regulation studies;
- examine shoreline land use and management practices;
- determine the socio-economic impacts of alternative land use and shoreline management practices compared to lake regulation schemes;
- investigate feasible methods of improving outflow capacity;
- develop a public information program for governments; and consider any other relevant matters.

The Commission was asked to prepare an interim report within one year of establishing its study team on measures to alleviate the present crisis, and to present a final report on the Reference by May 1989.

At the Commission's meeting in early September, it reviewed the request and established a framework for efforts to be undertaken. A task force of senior staff members and experts available to the Commission was proposed in order to address the limited, one-year study that will reexamine any available means to help alleviate the immediate crisis. The Commission intends to respond to the short-term request earlier than the one-year period suggested.

The Commission also recognized and welcomed the fact that the full Reference represented a far-reaching study that will involve new initiatives, ideas and methods of analysis beyond those of previous studies. It was decided that, in order to frame and implement this task,

Damage from a storm last December on the eastern shore of Lake Michigan near Grand Haven, Michigan.
Credit: NOAA/GLERL

Inside ...

"Lake Erie exceeded its normal monthly mean for October (2.65″) in the first 10 days of that month in 1986."

Precipitation Exceeds Normal Levels By Over 300% in Early October

Precipitation on all five lakes was above normal during the end of September and early October. Figures for October 1-15, 1986 are shown below. Precipitation has been so high on the southeastern end of the basin that Lake Erie exceeded its normal monthly mean for October (2.65″) in the first 10 days of that month in 1986.

Lake	Precipitation level	Normal level	Percent of normal
Superior	1.84″	1.29″	143%
Michigan-Huron . .	2.28″	1.32″	173%
Erie	3.34″	1.28″	360%
Ontario	2.24″	1.43″	157%

1986 Great Lakes Levels and Flows

Listed at left is a monthly summary of the recorded water levels for the summer and fall months of 1986 and the maximum levels recorded for each of the Great Lakes and Lake St. Clair. Recorded levels are measured according to the height the water reaches above sea level. Plan '77 refers to the 1977 Plan of Regulation the Commission has used since 1979 for setting outflows of Lake Superior to obtain systemic regulation of the lakes.

EVENTS

INTERNATIONAL JOINT COMMISSION Schedule of Meetings

The following includes upcoming meetings scheduled by the Commission and its various boards. Most meetings are not open to the public; please contact an IJC office for further information.

November 12-13 – Lake Huron Task Force
Burlington, Ontario
18 – Niagara and St. Lawrence Rivers Task Force
Buffalo, New York
18-19 – Sediment Subcommittee
Toronto, Ontario
19-21 – Science Advisory Board
Windsor, Ontario
20 – Joint Science Advisory Board/Water Quality Board
Windsor, Ontario
20-21 – Water Quality Board
Windsor, Ontario
20-21 – Lake Superior Task Force
Windsor, Ontario
December 3 – Upper Connecting Channels Task Force
Windsor, Ontario
4 – Niagara and St. Lawrence Rivers Task Force
Longueuil, Quebec
5 – Science Advisory Board Executive Committee
Windsor, Ontario
9-11 – IJC Executive Meeting
Washington, DC
January 13-14 – Aquatic Ecosystem Objectives Committee
Windsor, Ontario
13-14 – IJC Executive Meeting
Washington, DC
February 10-12 – IJC Executive Meeting
Ottawa, Ontario

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The 13th Annual Aquatic Toxicity Workshop, sponsored by the University of Moncton, Department of Biology, will be held November 11-14, 1986 in Moncton, New Brunswick. For details contact Professor Lakshminarayana, Department of Biology, University of Moncton, Moncton, NB E1A 3E9. (506) 858-4323.

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Environment Canada is hosting a Symposium November 11-12 on Wastewater Treatment at the Hotel Meridien in Montreal, Quebec. It is addressed to scientists, engineers, technicians, plant operators and students involved in the research, design, operation and management of wastewater treatment plants. For further information contact Michel Cloutier, Technology Transfer and Training Division, Environmental Protection Service, Environment Canada, Ottawa, Ontario K1A 1C8.

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"'86 Summit on Great Lakes Water Quality" is the theme of a three-day program offered by The Center for the Great Lakes, November 17-19, 1986. The goal of the conference is to provide an opportunity for citizens, scientists, elected officials, government agents, and business and industry leaders to review past progress and present efforts in fulfilling the goals and objectives set forth in the Great Lakes Water Quality Agreements of 1972 and 1978. Plenary and panel sessions are scheduled to discuss water quality programs at all levels of government, new and proposed initiatives, how 11 critical pollutants travel through and affect the lakes' ecosystem, and other topics. For registration materials contact Vivian Maine, The Center for the Great Lakes, 435 N. Michigan Avenue, Suite 1408, Chicago, IL 60611. (312) 645-0901.

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The University of Minnesota is sponsoring the 19th Annual Water Resources Conference November 20-21, 1986 in St. Paul. For registration information contact John Vollum, University of Minnesota, 315 Pillsburg Drive SE, Minneapolis, MN 55455. (612) 373-3157.

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The Banff Centre School of Management will present a seminar November 23-28, 1986 entitled "Native Canadian Relations and Resource Development Issues." Organized programs and small group discussions are planned to allow participants an opportunity to share perspectives on general issues surrounding resource development and native concerns. Contact Susie Washington, Program Manager, The Banff Centre School of Management, Box 1020, Banff, Alberta T0L 0C0. (403) 762-6137.

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The National Water Resources Association will hold its Annual Convention December 1-5, 1986 at the Hotel del Coronado in San Diego. A series of keynote and smaller sessions are planned on a wide variety of topics concerned with water resources management. For registration details contact the National Water Resources Association, 955 L'Enfant Plaza SW, Washington, DC 20024. (202)488-0610.

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The Minnesota Environmental Quality Board announces the 1986 Environmental Congress will be held December 2-3 at the Town Square Holiday Inn, St. Paul, Minnesota. The conference is designed to provide a forum for a diverse group of citizens to discuss the present and future state of Minnesota's environment. Small group sessions are planned to identify environmental issues that will require concerted effort by citizens and authorities until the year 2000. For more information contact the Minnesota Environmental Quality Board, Room 100, Capitol Square Building, 550 Cedar Street, St. Paul, MN 55101. (612) 296-2603.

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"Acid Rain: The Relationship between Sources and Receptors," a conference sponsored by the Acid Rain Information Clearinghouse (ARIC), will be presented December 3-4, 1986 at the Sheraton National Hotel, in Arlington, Virginia. The conference is designed for the non-technical audience and specialists in acid rain research who would benefit from discussions on the nature and scope of scientific understanding and research programs on acid rain, discovering areas of consensus and disagreement, and assessing current policy options. Program brochures and registration materials are available from ARIC, 33 South Washington Street, Rochester, NY 14608. (716) 546-3796.

The Ontario Ministry of the Environment will host a Technology Transfer Conference December 8-9, 1986 at the Sheraton Centre in Toronto. Research aspects of air pollution, water quality, leachates, liquid and solid wastes, analytical and instrument development and environmental economics will be discussed in five concurrent sessions, and progress made on Ministry external projects will be presented in over 90 papers and in poster sessions. For more informaton contact M. Moselhy, Research Management Office, Corporate Policy and Planning, Ministry of the Environment, 135 St. Clair Avenue West, Toronto, ON M4V 1P5. (416) 965-5788.

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Under the auspices of the European Cultural Foundation and in recognition of the European Year of the Environment 1987, the European Conference on Industry and Environmental Management will be held in Interlaken, Switzerland on April 5-9, 1987. The event is the first in a biannual series of environmental conferences under the auspices of the European Cultural Foundation and cosponsored by the United Nations Environment Programme. The purpose of the conference is to focus on the state of Europe's environment, provide an overview of emerging economic and political perspectives, and examine the role of business in powering and directing the transition to an environmentally and economically sustainable Europe. While the major focus will be on issues of concern in Europe, material from around the world will be included. For more information contact European Conference on Industry and Environmental Management, Usteristrasse 19, CH-8001 Zurich, Switzerland.

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The International Groundwater Modeling Center has developed a series of short courses for 1987, beginning next March. Most courses are two to four days in duration and center on a specific area of study surrounding groundwater, such as modeling, pollution, flow and transport, and three-dimensional groundwater models. For more information contact Margaret Butorac, IGWC, Holcomb Research Institute, Butler University, 4600 Sunset Avenue, Indianapolis, IN 46208. (317) 283-9458.

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The National Water Research Institute Canada Centre for Inland Waters is the site for the Symposium on Interbasin Transfer of Water: Environmental Impacts and Research Needs, April 27-29, 1987 in Burlington, Ontario. Cosponsored by the Institute, the Canadian Water Resources Association and the National Water Research Institute, the objective of the symposium is to identify and define impacts to the environment from major water transfers and research needed to effectively plan and manage those projects. For more information contact Micheline Hawkins, Hydraulic Division, National Water Research Institute, 867 Lakeshore Road, P.O. Box 5050, Burlington, ON L7R 4A6. (416) 336-4999.

Toledo has been chosen as the site for the IJC's 1987 Biennial Meeting on Water Quality.

Plans Underway for the 1987 Biennial Meeting on Great Lakes Water Quality

The International Joint Commission will hold its 1987 Biennial meeting November 16-18, 1987 at the the Radisson Hotel and SeaGate Convention Centre in Toledo, Ohio. As in past years, this will be an opportunity for citizens in the Great Lakes basin to meet with staff and Commissioners from the IJC and others working in the water quality field to discuss progress achieved in restoring and preserving the Great Lakes, as well as what must still be accomplished to achieve the goals set forth in the Great Lakes Water Quality Agreement.

After a welcoming reception Monday evening for all registrants, the Great Lakes Water Quality and Science Advisory Boards will present their reports Tuesday, November 17. A copy of both reports will be mailed to each participant prior to the conference to encourage discussion with the boards after their presentations.

Concurrent workshops are scheduled Wednesday, November 18 on topics of current interest to citizens in the Great Lakes basin. These workshops will provide an opportunity for public participation and interaction with IJC advisors and other experts in the water quality field. Possible topics include toxics, lake levels, Areas of Concern, phosphorus programs, atmospheric deposition, nonpoint source pollution, and the Great Lakes Water Quality Agreement review process.

Local tours and events are planned to take advantage of Toledo's location on the Maumee River and Lake Erie, as well as evening entertainment and exhibits from organizations throughout the Great Lakes basin. Look for further program and registration information on the 1987 Biennial meeting in the next issue of FOCUS.

The Green Bay Experience in Developing a Remedial Action Plan

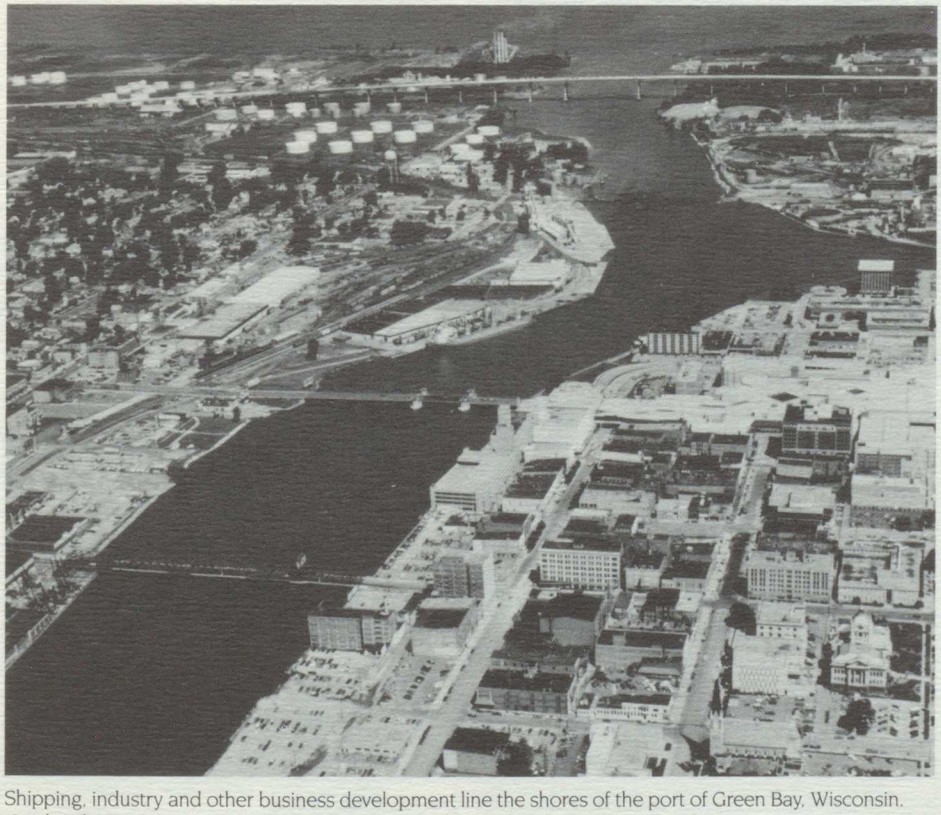
This is the third in a series of articles highlighting the development of remedial action plans for restoring beneficial uses in Areas of Concern in the Great Lakes basin.

by John Hartig

From its early French name, "Baye des Puants" (Bay of Bad Odors), to its current name of Green Bay, this long, shallow extension of northwestern Lake Michigan has had a long history of degraded water quality. This is due, in part, to the fact that the Green Bay watershed drains approximately 4,000 km^2 (15,700 square miles) of land surface in 24 counties in both Wisconsin and Michigan, or about one-third of the total Lake Michigan drainage basin. Although 14 rivers and numerous tributaries drain into Green Bay, the Fox River contributes the largest volume of water and most of the suspended and dissolved pollutants entering the Bay. About one-third of the drainage basin is forested, while much of the rest is intensively farmed or occupied by urban areas. In addition, the Fox River Valley is heavily industrialized and contains the largest concentration of pulp and paper mills in the world.

Major water quality problems identified in the Fox River and Green Bay include:

- fish contaminated with polychlorinated biphenyls (PCBs), resulting in the commercial carp fishery being closed and issuance of fish consumption advisories;
- sediments in the lower Fox River and the navigation channel leading out into Green Bay are contaminated with high concentrations of volatile solids, chemical oxygen demand, nitrogen, oil and grease, mercury, phosphorus, lead, zinc and PCBs;
- reproductive failure of Forster's terns nesting on Green Bay;
- some tumors in fish inhabiting the Fox River;
- elevated phosphorus loadings;
- dissolved oxygen depletion in the lower Fox River and lower Green Bay during limited times of the year; and
- cultural eutrophication of lower Green Bay.



Shipping, industry and other business development line the shores of the port of Green Bay, Wisconsin. *Credit: Photo courtesy of the Brown County Board of Harbor Commissioners*

In recognition of these problems, Fox River/Green Bay was identified as one of the 42 Areas of Concern in the Great Lakes basin. As a result of the 1985 Great Lakes Water Quality Board Report, the state of Wisconsin committed itself to developing a remedial action plan (RAP) for Fox River/Green Bay, with the goal of restoring beneficial uses by the year 2000. The RAP will be developed by Wisconsin Department of Natural Resources (DNR) in cooperation with other agencies and citizens of northeast Wisconsin.

The RAP will build on past efforts of government, industry, local communities, public interest groups, the Great Lakes Fishery Commission, Fox Valley Water Quality Planning Agency, Future of the Bay and other groups. For example, over $300 million has already been spent by local governments and industry on water pollution control programs, which have resulted since 1970 in improved dissolved oxygen levels in the Fox River and Green Bay and a return of the fishery. Problems remain, however, including contaminated fish and sediments, reproductive failure of terns, elevated phosphorus loadings and the associated

cultural eutrophication in the lower Bay. The RAP will provide a strategy to solve these problems using the ecosystem approach identified in the 1978 Great Lakes Water Quality Agreement.

A March 1986 Green Bay/Fox River Research Symposium, jointly sponsored by University of Wisconsin Sea Grant and Wisconsin DNR, helped to focus activities related to the development of the RAP. This symposium was organized into three topics (toxic substances, nutrient and trophic dynamics, and fishery resources) and addressed four questions: What improvements have occurred? What problems remain? What should be taken into account to solve these problems? What are the management options? Results of the Symposium were published in July 1986.

Concurrent with the symposium, Wisconsin DNR developed a "scope of study" for development of the RAP and established four Technical Advisory Committees (toxic substances management, biota and habitat management, eutrophication and nutrient management, and institutional arrangements) and a Citizens' Advisory Committee. The four Technical Advisory Committees are preparing individual reports to serve as the basis for the RAP. The Citizens' Advisory Committee, through monthly meetings, provides public input to development of the RAP. The committee's top ten concerns were identified as: toxic substances, dredging and spoil disposal, habitat loss, conflicting uses, sedimentation, nutrients and eutrophication, nonpoint source pollution, water levels, whether dredging should continue, and shoreline use.

Once the Technical Advisory Committees have submitted their final reports, the Citizens' Advisory Committee will evaluate alternatives and advise the Wisconsin DNR on management strategies. The DNR will then hold public meetings and a public hearing to obtain additional public input. Based on this input and the Wisconsin DNR review, the RAP will be completed and sent to the Secretary of Wisconsin DNR. Following the secretary's approval, the Fox River/Green Bay RAP will be submitted to the IJC's Water Quality Board, which is responsible for evaluating all RAPs for their adequacy.

It also should be noted that the Great Lakes National Program Office of the US EPA has initiated a major study of Green Bay to quantify loadings of PCBs, benzo(A)pyrene, dieldrin and phosphorus to the Bay and predict, via modeling, the system response to different cleanup strategies. Field work for this study will be carried out in 1987-1988, with final reports available in 1989. The results of this study will update the loadings data base for Green Bay and further define remedial actions necessary to restore uses.

For additional details on development of the Fox River/Green Bay RAP, contact Ms. Lynn Persson, Wisconsin DNR, WR/2, P.O. Box 7921, Madison, WI 53707. (608) 266-9257.

Citizens Respond and Attend Public Hearings for Areas of Concern

If the concern and interest of citizens in the Great Lakes basin for clean water was ever in question, it was answered this past summer when many of them attended public hearings at Areas of Concern in Ontario and Michigan (see FOCUS, Volume 11, Issue 2, p. 9). The following is a brief synopsis of some of the activities and issues raised by citizens participating in these hearings.

Community Efforts Mark Kickoff of 20-year Cleanup of Detroit's Rouge River

The Rouge River, an 125-mile waterway that drains 467 square miles in southeast Michigan, was the focus of efforts by more than 2,000 volunteers June 7, 1986 to begin a massive cleanup of the river. Local residents from 36 communities and

Citizens join together to clean debris from the Rouge River for Rouge Rescue.
Credit: Rudolph T. Ruzicska, Jr.

coordinating agencies have vowed to reclaim the polluted Rouge River by 2005. Volunteers met at 16 designated sites to pull logs, bottles, bicycles and other assorted trash from the river. Equipment was used to even pull an old, mud-covered Fiat car from one part of the river.

The Rouge is one of three inland rivers in the region designated an Area of Concern by the IJC Great Lakes Water Quality Board due to the proliferation of gross solids, turbidity, odors, low oxygen, contaminated bottom sediments and algae. The Rouge River basin contains more than one million inhabitants and has the greatest potential for public contact and use of any river basin in Michigan. However, excessive discharges of human and industrial wastes have created a river that, under computerized satellite photographs, cannot be recognized as a waterway.

The basin is affected by direct industrial discharges, nonpoint sources of pollution and the estimated 180 combined sewer overflows (CSOs) of sewage and industrial wastes. Total annual volume of discharge from CSOs alone is estimated at more than six billion gallons. Volunteers at the Rouge River Cleanup Day spent the morning and early afternoon realizing the extent of the damage to the river, and taking important first steps to create greater emphasis towards cleanup of the Rouge River.

– by Sally Cole-Misch

Michigan Provides Hearings for Citizen Input

The State of Michigan, as a part of its commitment to devising a cleanup strategy for each of their 14 Areas of Concern, has stated that involvement of local citizens is an important part of ensuring that a cleanup strategy is developed and implemented. As a first step in this process, public hearings were held throughout the summer at each of the 14 areas. Such a meeting was held on Saginaw River and Bay September 16, 1986 in Bay City, Michigan. The purpose of the meeting was to provide the public with a status report on problems, proposed solutions and progress in remedial actions.

The meeting, which was attended by approximately 200 people, was separated into two parts. Agency representatives made formal presentations, followed by a lively question and answer period. For example, the first presentation by Greg Goudy of Michigan Department of Natural Resources (DNR) provided an overview of specific problems in the area and a description of remedial actions. Three major concerns were identified: sediments as a secondary source of contaminants (particularly PCBs, PBB and metals); fish consumption health advisories; and eutrophication, which is primarily related to nonpoint source phosphorus loadings. A number of remedial actions were described, such as the phosphorus ban on detergents and extensive municipal source controls. It was also suggested that implementation of an industrial effluent pretreatment program was having a significant effect on active sources of contaminants. The IJC has not been advised of any evidence of the success of this program to date.

Of current local interest were the effects of recent extensive flooding in the Saginaw River as a result of heavy rainfall. Two major concerns were raised by DNR representatives, including the possibility of bacterial and viral contamination as a result of municipal sewage plant overloads thus bypassing raw sewage, and the flooding of the Dow Midland facility and the possible contamination of the Saginaw River resulting from flooded wastewater treatment facilities and general site runoff. Citizens were also concerned about the possibility of dioxin releases from Dow and the effects of heavy metals and other contaminant deposition on cropland after recession of flood waters.

Additional concerns raised by the public and citizen organizations, including Greenpeace and the Saginaw Bay Advisory Council, included deformities in cormorants and terns, the effects of overflow dredging in the Saginaw River, recent mosquito sprays with malathion and the apparent lack of commitment to the philosophy of zero discharge for persistent organic contaminants as promulgated in the 1978 Great Lakes Water Quality Agreement. The point was made a number of times that the goals in the Clean Water Act had been lost sight of and current legislation, if enforced, was quite likely more than adequate to ensure environmental protection. Another concern was that agencies should be provided with resources and political commitment to enforce that legislation.

The DNR committed themselves to provide all attendees with copies of the proposed remedial action plan for further comment and dialogue to maintain public involvement in the rehabilitation process. For further information on this or other public hearings in Michigan, contact Karen Gottlieb, Office of the Great Lakes, Michigan Department of Natural Resources, P.O. Box 30028, Lansing, MI 48909. (517) 373-3588.

– by Trefor Reynoldson

The Role of Citizens and Government discussed at Hamilton Harbour Public Meeting

More than 150 citizens and representatives of government and industry attended the "Dialogue on Hamilton Harbour" public hearing July 16, 1986 at the Hamilton Convention Centre. The meeting was cosponsored by the Ontario Ministry of the Environment and Environment Canada in order to hear citizens' response to the question, How important is it that water quality in Hamilton Harbour be improved to permit: 1) boating, 2) water sports, 3) swimming, 4) edible and natural reproducing fishery, 5) shipping and navigation, 6) industrial uses, 7) wildlife habitat, and 8) a drinking water supply?

Like other public hearings on Areas of Concern and remedial action plans, government representatives presented the

More than 150 citizens attended the Hamilton public hearing to learn more about remedial action plus to improve water quality in the harbour.

past and present water quality of the Harbour, the extent of damage on wildlife and fisheries, and the role remedial action plans will take in restoring quality to the water in the harbour. The level of contamination in the bottom sediments is a significant factor contributing to the harbour's present condition. More than 80% of the loadings of suspended solids into the harbour are retained there. Inputs from municipal and industrial sources provide an environmental stress that cannot be assimilated by the harbour's ecosystem, and reducing the present loadings will be more expensive than previous efforts to reduce nutrient loadings.

Dissolved oxygen levels, a major determinant of water quality, are extremely low and have even dipped to as low as three to zero parts per million during the summer months. Because of this, few cold water fish can survive in the harbour waters. Iron and chromium exceed required levels throughout the harbour; the majority of iron is discharged by the Dofasco and Stelco steel companies.

Citizens commenting at the hearing were concerned about the future of Cootes Paradise, which connects with the harbour via the Desjardins Canal and represents the largest warm water fish habitat in western Lake Ontario. While some wanted that area preserved as it is for protection of wildlife, others preferred that the area be dredged in order to remove the oxygen-consuming bottom sediment. The possibility of leachate from landfills was also discussed, as well as ensuring the safe treatment and discharge of water from the Dofasco and Stelco steel companies who are the principal users of Hamilton Harbour water for industrial purposes. Additional hearings are expected as the remedial action plan for the harbour progresses.

– by Sally Cole-Misch

International Association of Great Lakes Research Endorses Recommendations of World Large Lakes Conference

by Trefor Reynoldson

The 29th Conference on Great Lakes Research was held at the Scarborough Campus of the University of Toronto, May 26-29, 1986. These annual conferences stimulate information exchange on all aspects of theoretical and experimental research which have a direct relationship to the Great Lakes and may be applicable to the understanding of large lakes in general. Specific sessions focused on toxic chemicals; physical, chemical and biological monitoring; the biology and ecology of fish; and the ecosystem approach to Great Lakes management.

A highlight of the 29th Conference was the presentation of the Chandler-Misener Award to Dr. Fernando Rosa of the National Water Research Institute, Burlington, Ontario for his paper "Sedimentation and Sediment Resuspension in Lake Ontario." The International Association for Great Lakes Research gives this award each year for the scientific paper published in the *Journal of Great Lakes Research* judged to be of the highest quality. Dr. W. Sonzogni, editor of the *Journal*, presented the Editor's Award to Dr Y. K. Chau, also of the National Water Research Institute, for continued long-term service as an associate editor to the *Journal*. Bernard O. Bauer of John Hopkins University received the HYDROLAB award for best student paper, entitled "Wave Energy Distribution in a Lacustrine Nearshore," coauthored by Brian Greenwood.

A keynote session on toxic chemicals presented the conclusions and recommendations of the World Conference on Large Lakes, held a week earlier on Mackinac Island. These conclusions and recommendations will be available in full in the Proceedings of the World Conference. The membership of the International Association of Great Lakes Research unanimously voted to endorse these recommendations. Those recommendations which relate directly to the International Joint Commission and the 1978 Great Lakes Water Quality Agreement were highlighted during the keynote session. They include:

- that the memberships of the Science Advisory Board and the Council of Great Lakes Research Managers should be developed so that their recommendations are incorporated into the research priority-setting mechanisms of both governments;
- that a conference of international commissions be convened to address institutional arrangements and the role of international commissions

"Since the Commission was formed in 1909, it has been involved in many issues ... and others will doubtless emerge."

in addressing prevention and remediation of transboundary pollution;

- that the policy of the Great Lakes Water Quality Agreement be reaffirmed, particularly that "... the philosophy adopted for control of inputs of persistent toxic substances shall be zero discharge"; and
- that the Governments of Canada and the United States present a reference to the International Joint Commission to undertake a major study on an integrated approach to the management of toxic contaminants.

For more information on the conference or the International Association of Great Lakes Research, contact Dr. Russell Kreis, US Environmental Protection Agency Large Lakes Research Station, 9311 Groh Road, Grosse Ile, MI 48138. (313) 226-7811.

The IJC from Coast to Coast

by Geoffrey Thornburn

While most readers of Focus may identify the International Joint Commission with the Great Lakes, the work of the Commission in fact stretches from coast to coast.

These activities include the approval and monitoring of requirements for the operation of dams and other structures on rivers running along or across the boundary, or studying and monitoring water quality and quantity problems (past, present or potential) and advising governments on appropriate actions in relation to these problems. The Commission also has a continuing responsibility to observe and advise governments as may be appropriate on air pollution problems along the boundary.

As with Great Lakes matters, technical boards undertake studies and monitoring as may be required to inform and advise the Commission on specific or general issues of concern along the boundary waters. Members are generally appointed in equal numbers from each country by the Commission, and most are from governmental agencies. However, members serve in their personal and professional capacities to share the best information possible among themselves and for consideration by the Commission.

In British Columbia and Washington State, the IJC is involved in the regulation of several transboundary waters. The Osoyoos Board of Control has been particularly busy in 1986, overseeing the construction of a new dam near Oroville, Washington. The dam was first approved by the Commission in 1982 to replace an aging wooden structure that had been subject to an IJC Order of Approval.

Other Boards report regularly on the levels of the Columbia River at the boundary and Kootenay Lake, which has been subject to several IJC Orders over the years. The Skagit River Board of Control was disbanded at the end of 1984 following the signing of the Skagit River Treaty, which resulted from the resolution, under IJC auspices, of the long-standing Ross Dam controversy.

From the southeastern corner of British Columbia, the Flathead River crosses into the State of Montana where it forms a boundary of Glacier National Park. As a result of United States concerns about the possible recreational and environmental impacts of a proposed British Columbia coal mine, the Governments of the United States and Canada asked the Commission to study the situation. The work of the study board established by the IJC is nearing completion and the Commission will hold public hearings in the next few months and write its report to the governments.

The IJC has continuing responsibilities for various river systems in the midpart of the continent, including the St. Mary and Milk Rivers just east of the Rockies, and the large Souris-Red Rivers system along the Saskatchewan-North Dakota-Manitoba borders. A broad advisory function in this area is provided to the Commission by the Souris-Red Rivers Engineering Board, as well as providing water quality monitoring on the Red River itself. In recent years, the Commission has also been active in addressing water apportionment and quality issues on the Poplar River, an assessment of the transboundary impacts of the Garrison Diversion project and other prairie water schemes.

From the middle plains region to the Great Lakes lies the large Rainy River-Lake of the Woods system. The Rainy River and Namakan chain of lakes form the international boundary for much of their combined length, and the Commission has responsibilities with respect to water levels, controlled by several dams, and water quality. Levels on the Lake of the Woods, covered by a separate bilateral Convention, are a domestic Canadian responsibility unless they go beyond defined limits.

For water quantity concerns in the Great Lakes, the Commission has three Control Boards. These Boards monitor and guide the implementation of the Commission's Orders of Approval concerning the outflows of Lake Superior, and the distribution of flows in the Niagara River and the St. Lawrence River, which controls the outflows of Lake Ontario. These decisions, especially those on the St. Lawrence River, are complex and a number of important human factors and changing natural conditions must be taken into account in regulating outflows. A new advisory structure is expected to be formed in response to the 1986 reference on fluctuating Great Lakes levels. A complete description of this reference is on page one of this issue of FOCUS.

East of the Great Lakes, the Commission has been involved in a number of

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issues over the years, including complex studies and specific approvals on the Richelieu River flowing from Lake Champlain where New York, Vermont and Quebec meet, and on the Saint John River, which forms part of the Maine-New Brunswick boundary. The present concern of the Commission in this region is the St. Croix River, forming another part of the boundary between New Brunswick and Maine. For many years, the Commission has had jurisdiction over the construction and operation of dams on the river, and has monitored progress on restoring the water quality of the river since 1961. Because of improvements in the river's water quality, the focus of the Commission's work and that of its active Advisory Board has shifted recently to restoration of the salmon fishery and other aquatic resources, which can now realistically be achieved.

Since the Commission was formed in 1909, it has been involved in many other issues along the boundary of the United States and Canada, and others will doubtless emerge. Several issues have continued to be of concern through the years; others are resolved and disappear from active prominence. Through the work and help of its many technical boards — a much larger institutional family than that involved with the Great Lakes water quality issues — the Commission can continue to assist the governments in dealing with, preventing and resolving problems of mutual concern along the common boundary.

For further information on the IJC's responsibilities outside the Great Lakes basin, contact either of the IJC Section Offices, at 100 Metcalfe Street, 18th Floor, Ottawa, ON K1P 5M1. (613) 995-2984 or 2001 S. Street NW, 2nd Floor, Washington, DC 20440. (202) 673-6222.

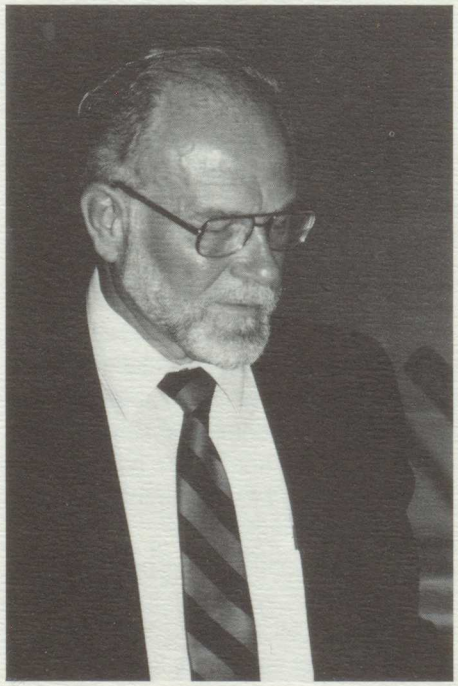
Citizen Hearings Focus Attention on the 1978 Great Lakes Water Quality Agreement

by Tim Eder

"Toxics in the Great Lakes dwarf all other issues by comparison" ... "The 1978 Water Quality Agreement has good language but it hasn't been implemented or enforced."

These are typical comments Great Lakes United (GLU) heard as they completed a tour of the Great Lakes to host public hearings and press conferences in 19 Canadian and US cities (see FOCUS, Volume 11, Issue 2, p. 11-12). At each hearing, citizens, government officials and agency representatives were asked to comment on the effectiveness of efforts to fulfill the goals and objectives of the 1978 Great Lakes Water Quality Agreement. They also were asked for suggestions on how the agreement should be revised, if at all.

While it may not be the first time comments such as these were expressed, the forums were unique. It was the first time a citizen's organization travelled to cities throughout the basin to ask the public what they thought about the agreement. And, it may have been the first time government officials presented testimony to a panel made up of citizen group representatives. Great Lakes United will compile and summarize the comments it received at the hearings into the first binational, basinwide statement from citizens on what is needed to improve water quality protection efforts for the Great Lakes.



Lovell Richie, Senior Executive Officer of the Minnesota Pollution Control Agency and member of the IJC's Great Lakes Water Quality Board, testifies at the Duluth public hearing of Great Lakes United.
Credit: Photo courtesy of Great Lakes United

Attendance at the hearings exceeded GLU's expectations, with an average of 15 to 20 people presenting testimony and 50 to 120 in the audience. Citizens attended from almost every major conservation and environmental organization in the region, including fishing enthusiasts, tourism councils, labor groups and the League of Women Voters. Representatives from Congress, Parliament, the US Environmental Protection Agency, Environment Canada, Commissioners and staff from the International Joint Commission, state and provincial water quality programs, industry, and officials from state and local governments either testified or attended various hearings.

Delegations at the hearings often raised many of the same issues and concerns. Nearly everyone agreed, for example, that the agreement is a good document. Many citizens recommended strengthening it in the areas of toxic rain, atmospheric fallout, hazardous waste landfills and nonpoint runoff as sources of toxics to the lakes. Some suggested the agreement be renegotiated, while others feared that renegotiation at the present time could weaken the document. Two of the most often repeated themes included:

1. There must be an improved means of enforcing the agreement. Various positions were taken as to how to

meet this need, from giving the IJC broader powers to creating a new, binational water quality police force.

2. Public information and involvement under the agreement must be improved. Because the agreement does not provide a direct means of enforcement, it is critical that the public knows and understands its provisions, its requirements and how well the Parties are meeting these requirements. GLU found that the public has a strong desire to be involved in all efforts to restore and preserve the Great Lakes, particularly in tackling the tough issues surrounding toxic contamination. At many hearings, GLU was literally applauded for taking the time to visit each area and ask citizens how they felt about the Great Lakes and the agreement.

These two concerns and others will be analyzed by GLU to form several specific recommendations. Other issues that were addressed will also be reviewed, including:

1. the lack of a strategy or technology to deal with in-place pollutants or to protect the ecosystem during dredging and disposal of contaminated dredge spoils;
2. the impact of toxics on human health, which is of tremendous concern to citizens due to the finding that residents of this region carry high body burdens of toxic chemicals, and
3. the critical need for public involvement in remedial action plans for Areas of Concern in the basin.

Now that the 19 hearings have been completed, GLU's Water Quality Task Force has begun the arduous task of reviewing tapes, transcripts, notes and testimony to compile and release its report by February 1987. The report will analyze water quality and institutional issues and make numerous recommendations.

The tour of the Great Lakes, in order to put on the hearings, was tremendously rewarding for the GLU members involved. Because of the organization's limited budget, it relied on local organizations and individuals in each location to assist in organizing boat tours and press conferences, arranging transportation and scheduling for three to five panelists, and identifying from six to 20 people who could speak at each hearing on a document as abstract as the 1978 Great Lakes Water Quality Agreement. Great Lakes United is indebted to these people for the success of its hearings.

The true success of the project, however, will be measured by the final report and GLU's ability to garner action on its recommendations. The organization feels it will be successful for a number of reasons: the tremendous number of presentations and recommendations from the hearings, which were of excellent quality; the "army" of citizens, activists, politicians and sympathizers GLU encountered along the way who will work to ensure action is taken on the recommendations; and, finally, because the people Great Lakes United met care deeply about the lakes and their future.

For more information on Great Lakes United and its report, contact Tim Eder, 24 Agassiz Circle, Buffalo, NY 14214 (716) 886-0142.

Great Lakes Levels Addressed at IJC's Fall Semi-Annual Meeting

by Alan Clarke and Sally Spiers

The International Joint Commission held its fall semi-annual meeting October 7-9, 1986 at the Conference Centre in Ottawa, Ontario. The Commission met in executive sessions before and after board presentations Tuesday and Wednesday.

Cochairs of the Great Lakes Water Quality Board, Great Lakes Science Advisory Board and the International Air Quality Advisory Board met with the Commission Tuesday. The three boards discussed preparations for a jointly sponsored workshop on atmospheric deposition that was held October 29-31, 1986 in Scarborough, Ontario. Also discussed was the Forum on Remedial Action Plans, which brought the coordinators of plans for each of the 42 Areas of Concern to Windsor October 20-21, 1986. Reviews of these workshops will be included in the next issue of FOCUS.

The Great Lakes Water Quality Board and the Great Lakes Science Advisory Board also reported on preliminary outlines of their 1987 reports on Great Lakes water quality and discussed their participation in the next biennial meeting on Great Lakes Water Quality to be held in Toledo, Ohio the week of November 16, 1987. The Water Quality Board expressed its satisfaction with efforts that are so far being made toward developing remedial actions plans for Areas of Concern in the basin.

In its report to the Commission, the International Air Quality Advisory Board provided an overview of the board's activities and directed the Commission's attention to a number of matters, including the potential for transboundary migration of air pollutants from a new incinerator now under construction in Detroit.

The Detroit Resource Recovery Facility, an incinerator/boiler, is located three miles from the US-Canada border. Concern has been raised by government and public interest representatives on both sides of the border that the facility falls short of state-of-the-art air pollution control. The Commission requested the Board keep it informed of all on-going actions pertaining to the incinerator, and

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advised the Governments of the situation at a meeting with representatives later in the week.

The Commission met Wednesday with its three Great Lakes Control Boards: the International St. Lawrence River Board of Control, the International Lake Superior Board of Control and the International Niagara River Board of Control. Current high water levels on all of the lakes was discussed as well as possible actions which could be taken to alleviate the present crisis.

Cochairs of the Flathead River International Study Board also met with the Commission to discuss the progress of a study on the potential effects of the proposed Sage Creek coal mine on the quality of water in the Flathead River system. The International Osoyoos Lake Board of Control outlined the removal of Zosel Dam and construction of a new dam on the Osoyoos River, and the International Souris-Red Rivers Engineering Board reviewed activities in the Souris and Red River basins.

After the boards presented their reports, the Commission met with representatives from the Governments of the United States and Canada. Wilson Riley from the Office of Canadian Affairs, US Department of State and Len Mader from the US Transboundary Relations Division, Canadian Department of External Affairs attended along with representatives from the US Environmental Protection Agency and Environment Canada. Topics discussed included high water levels of the Great Lakes, the status of removal of the barge at the International Peace Bridge, the report of the Special Envoys on acid rain, Commission plans for the next Biennial Meeting on Great Lakes Water Quality in Toledo, the distribution of the IJC 1985 Activities Report and the Commission's concern about the potential adverse effects of the Detroit Resource Recovery Facility.

During the executive sessions and at a meeting of an ad-hoc group of experts following the semi-annual meeting, the Commission considered what immediate steps could be taken to partially alleviate the current high water level crisis on the Great Lakes. The Commission will discuss this and other issues in further detail again at its executive session in Washington, DC December 9-11, 1986.

Science Advisory Board Sponsors Food Web Workshop

by John Hartig

The first Food Web Workshop, hosted by the Great Lakes Science Advisory Board in December, 1985, focused on the role of food web dynamics in explaining recent increases in summer water clarity in the open waters of Lake Michigan. Over the past 15 years, Lake Michigan has experienced reductions in phosphorus loadings and a substantial increase in stocking of salmon and trout. The fundamental question for participants of the Food Web Workshop was what caused the increase in water clarity during the summer months: the reduced levels of phosphorus loadings to the lake, changes due to predation by the salmon and trout, or both.

The workshop brought almost 40 experts on Lake Michigan together to discuss this question. Participants were divided into two groups representing each possible cause of the increased water clarity: those who believe the "bottom up" theory, in which nutrient abatement (reduction in phosphorus loading) is responsible, or "top down" theorists, who believe increases in top predator fishes changed the food web structure and thus created greater water clarity.

Consensus was reached by workshop participants that "bottom up" abatement of nutrients has reduced winter-time phosphorus levels in Lake Michigan, which lowered the amount of spring phytoplankton, *and* that "top down" controls reduced alewife abundance and thus increased large cladoceran zooplankton (i.e. *Daphnia pulicaria).* These larger zooplankton, which are efficient at feeding on the phytoplankton, increased the amount of grazing on phytoplankton and thus caused the increase in summer water clarity. Such findings have significant implications for agencies attempting to manage lake systems.

In an effort to increase our understanding of the role of such food web dynamics in regulating water quality and to determine whether the changes that were found in Lake Michigan are occurring or could occur in other Great Lakes, the Science Advisory Board will host a Food Web II workshop on Lake Ontario in 1987. It has been proposed that the Food Web I and II workshops (along with other related initiatives) should culminate in a major international conference on food web interactions in large lakes. This proposed international conference could synthesize and disseminate information on the potential for a coordinated approach to management of large lakes that takes advantage of the synergism of nutrient abatement and food web controls.

For further information on the Food Web I workshop contact Dr. Jim Kitchell, Limnology Laboratory, University of Wisconsin, Madison, WI 53706, (608) 262-2840 or Dr. Marlene Evans, Great Lakes Research Division, University of Michigan, IST Building, Ann Arbor, MI 48109. (313) 764-6540. For more information on Food Web II, contact Dr. John Hartig, IJC Regional Office, 100 Ouellette Avenue, Eighth floor, Windsor ON N9A 6T3 or P.O. Box 32869, Detroit, MI 48232. In Canada call (529) 256-7821 and in the US call (313) 226-2170.

BRIEFS

Ontario has developed a new policy and program statement on controlling municipal and industrial discharges in surface waters, which will be enacted into Ontario's Environmental Protection Act and Water Resources Act. The program, "Municipal-Industrial Strategy for Abatement," or MISA, requires monitoring and strict effluent limits for both industrial and municipal dischargers of toxics. While the province's present pollution control system regulates only a limited number of conventional contaminants according to their concentration, MISA will set limits for several persistent toxic organics. Major features of the program include:

- Reductions in pollution are required from virtually every major toxic polluter of Ontario waterways, including eight industrial sectors where 200 of Ontario's 300 direct dischargers are located;
- By setting strict pollution control standards for municipal sewage plant effluent, pollution from an additional 11,700 industries that discharge wastewater into 400 municipal sewer systems will be reduced;
- A limit is set, for the first time in Ontario, on the absolute amount of contamination each source may discharge;
- Each direct discharger must meet standards attainable by the best available abatement technology; and
- Each industrial and municipal sector will be reexamined periodically to see if further reductions are necessary.

Two sets of regulations will implement the MISA program, by setting effluent limits and monitoring requirements. For copies of the program, write to the Ontario Ministry of the Environment, 135 St. Clair Avenue West, Toronto, ON M4V 1P5.

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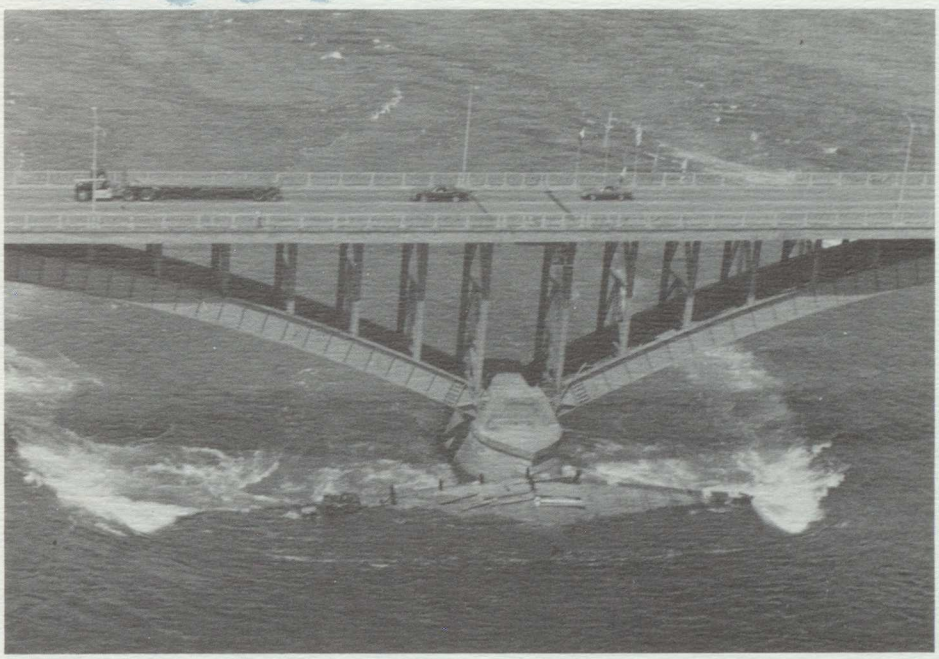
A 175-foot (53 meter) barge, bound for Richmond, Virginia from Detroit through the Great Lakes and New York State Barge Canal, ran into difficulty on the Niagara River in early August. The tugboat-powered barge missed the entrance to the Black Rock Canal near Buffalo Harbor and proceeded down the Niagara River. When the tug and barge entered the high velocity area upstream of the Peace Bridge, the barge swung sideways and was smashed against an abutment of the bridge. The Peace Bridge sits where the lake narrows into the Niagara River, and the barge is acting as a barrier for water to enter the river from Lake Erie by taking up more than 10 percent of the river width. The barge is thus aggrevating already record level conditions on Lake Erie by raising levels by as much as two inches, according to US Army Corps of Engineers estimates. The Corps is overseeing the removal of the barge, which is expected to take until late November.



A 175-foot barge jammed against an abutment of the Peace Bridge on the Niagara River.
Credit: US Army Corps of Engineers, Buffalo office

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The Canadian and US governments have agreed to develop a joint, 15-year, $1.5 billion plan to protect and increase North American waterfowl numbers. Through funds contributed by public and private sources from both countries, a joint management committee will allocate funds to cooperating farmers who will protect marshland and other nesting areas on their land. Farmers will be offered per-acre payments to encourage them to take land out of grain production and return it to forage or pasture land that could also be used for ducks. Over the past decade, Canadian populations of mallard and pintail ducks have decreased significantly, to less than five million.

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An agreement between Quebec and New York state was reached in early August to work together on key environmental issues such as hazardous waste, acid rain and water quality. The five-year agreement widens the scope of a 1982 agreement between the province and the state, which was limited to the study of acid rain. The study undertaken under the 1982 agreement, *A Water Chemistry Comparison of Several Quebec and New York Lakes in Relation to Acidification*, is available from David Shaw, New York State Department of Environmental Conservation, 50 Wolf Road, Albany, NY 12233. (518) 474-2121.

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Minnesota has established a system to classify those waters which have limited resource value in an attempt to identify those waterways unlikely to reach the national water use goal of "fishable and swimmable." Under 1983 amendments to US EPA's Water Quality Standards Regulation, states can remove a designated water use that is not an existing use, or establish subcategories of a use if it can demonstrate that attaining the designated use is not feasible.

The state defined limited resource value waters as those with conditions such as a severely limited existing fishery, limited recreational opportunities and intermittent flows. Out of approximately 92,000 miles of Minnesota waterways, about 775 miles have been designated thus far, where 100 municipal and 25 industrial wastewater treatment facilities discharge into these waterways. These waters are still protected to allow secondary body contact use, preserve groundwater for potable use, maintain aesthetic quality, protect downstream waters and allow for agricultural, wildlife and industrial use. Estimated annual cost savings, due to a reduction in use of resources to attempt to achieve an unrealistic

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goal in certain waters, include $12-19 million in capital spending and $1.3 million for operating and maintenance costs.

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According to a report commissioned by the Canadian government and produced as part of the Federal Task Force on Program Review, taxes or emission charges levied against companies would be more effective in controlling pollution than the current system of subsidies, tax expenditures and punitive regulations. The report states that existing regulatory approaches in Canada and the United States are not effective because of the excessive time required to carry out court actions on each violation of environmental regulations. Rather, it encourages imposing a fee on each specified pollutant emitted by an industrial plant to place continued pressure on the polluter to reduce emissions in the most efficient way. The report recommended greater study into the economic effects of environmental problems and developing a national environmental policy that more closely ties with resource development policy. For a copy of the Environmental Quality Strategic Review, contact Renouf Publishing, 211 Yonge Street, Toronto, ON M5V 1M4. (416) 363-3171.

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New York's water quality standards withstood a challenge before the state Supreme Court in late July when the court dismissed an attempt by the Niagara Falls Industrial Liaison Committee and the National Solid Waste Management Association to overturn numerical water discharge standards set in 1985 for 95 toxic chemicals. While the plaintiffs claimed that the state did not consider the full economic and social impacts of stricter standards as required by the State Environmental Quality Review Act, the court said that the state's environmental impact statement only had to address environmental questions, and the discussion by defendants was sufficient. Before these standards were established, the state regulated only seven substances.

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The University of Windsor, Ontario has received a $250,000 grant from the provincial Ministry of the Environment to monitor the St. Clair River - Lake St. Clair system for the presence and levels of chlorinated hydrocarbons and other compounds, including PCBs. Over three years, monitoring of existing chemicals will be followed by the study of the uptake of contaminants by aquatic plants and animals. Results will be used to develop a computer model to help predict the movement and distribution of contaminants in the system.

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The USS Bounty anchored at Dieppe Park in Windsor for four days as a part of its tour of the Great Lakes.

The State University of New York (SUNY) has formed the Great Lake Research Consortium, with participation from more than 50 researchers from the campuses at Buffalo, Brockport, Oswego and the College of Environmental Science and Forestry. The Great Lakes Research Consortium will encourage scientists and scholars in the SUNY system to cooperatively address and solve Great Lakes problems, and will serve as a focal point for interaction and communication among campuses and with government and industry. For further information write to Great Lakes Consortium, Room 257 Illick Hall, SUNY College of Environmental Science and Forestry, Syracuse, NY 13210.

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Scientists at Ohio State University have developed an Environmental Sensitivity Index to measure potential damage from oil spills or other toxic discharges into Lake Erie. Maps are used to color-code the US shoreline to indicate the relative potential damage that toxic substances can cause in different types of coastal areas. For example, exposed bedrock bluffs are listed as least sensitive, while wetlands areas are classified as most sensitive to damage. The maps will be made available to the US Coast Guard as an information base in cases of major oil spills or other toxic discharges into the lake. For more information on the index, contact Laura Fay or Charles Herdendorf, Ohio State University, Columbus, Ohio 43212. (614) 292-8949.

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The USS Bounty anchored along the Detroit and Windsor riverfronts for a week in August as a part of its tour of the Great Lakes. The replica of the original Bounty ship used in the movie, "Mutiny on the Bounty," joined the parade of tall ships that sailed through New York harbor for the July Fourth celebrations. From there, 23 crew members from around the basin sailed the ship on a tour of the Great Lakes. The ship was built 26 years ago for a remake of the original movie, and returned to its home in Florida in October.

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A new radio news program debuted on many of Michigan's commercial and public radio stations this past summer. *Outdoors Update* is a 10-minute weekly program that covers environmental, conservation and outdoor recreation news from around the state, and particularly legislation and public policy affecting the environment. Several programs have centered around issues concerning the Great Lakes and their water quality. The program is paid for and distributed by the Michigan United Conservation Clubs. If you're interested in starting a similar program or have information for the program, contact Don Weeks, P.O. Box 12179, Lansing, MI 48901. (517) 487-1441.

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Two Sediment Reports Published by IJC Dredging Subcommittee

by Robert E. White

The Dredging Subcommittee of the IJC's Great Lakes Water Quality Board has issued two reports on sediments. The first report, A Forum to Review Confined Disposal Facilities for Dredged Materials in the Great Lakes, is the result of a forum held by the subcommittee at Public Works Canada, Willowdale (Toronto).

The objectives of the forum were:

- to discuss the history and future uses of confined disposal facilities (CDFs) in the Great Lakes;
- to share current information on the design, construction, operation and maintenance of CDFs;
- to relate research and experience on the performance of CDFs in isolating contaminants from the aquatic environment; and

- to provide for the exchange of information on experience in the design, construction, operation and maintenance of CDFs in the Great Lakes and other locations in North America through the presentation of case studies.

Over 60 experts in dredging matters attended the forum, and 22 papers were presented. As a result of these presented papers and discussions with participants, the Dredging Subcommittee developed eight recommendations in the report.

A second report, Evaluation of Sediment Bioassessment Techniques, stems from previous findings of the Dredging Subcommittee that bulk (total) analysis of dredge material may not adequately forecast potential biological harm at dredging and disposal sites.

In its previous findings the Subcommittee had issued guidelines, including the need for sediment bioassessment. To test the practicality of sediment bioassessment, samples of Toronto Harbour and Toledo Harbor were shared with four federal laboratories to be tested for bioassessment by their method of choice.

From critical review of the four bioassessment reports, the Dredging Subcommittee developed eight recommendations.

These reports and the following related reports – Open Lake Site Selection Criteria Development, Great Lakes Dredging in an Ecosystem Perspective – Lake Erie, and Evaluation of Dredge Material Disposal Options for Two Great Lakes Harbours – are available.

For copies or further information, contact the IJC Great Lakes Regional Office, 100 Ouellette Avenue, 8th floor, Windsor, ON N9A 6T3 or P.O. Box 32869, Detroit, MI 48232. (519) 256-7821 or (313)226-2170.

FOCUS ON THE IJC

A small staff supports the work of the Commission, and the Canadian Section in particular, from its offices at 100 Metcalfe Street in Ottawa. Canadian Commissioners include Chairman **Pierre-Andre Bissonnette**, and Commissioners **E. Davie Fulton** and **Robert S.K. Welch**. In this issue of Focus on the IJC, we introduce you to the Ottawa staff.

The office of the Secretary to the Canadian Section has been held since 1959 by **David Chance**, who joined the Commission staff some five years earlier. His Secretary since 1979 has been **Cathy Laframboise**, formerly with the Anti Inflation Board.

The longest standing employee, with the Commission since 1952, is **Edna MacKinnon**, Secretary to Engineering Advisors **Murray Clamen** and **Ted Bailey** and to Senior Environmental Advisor **Andrew Hamilton**. Dr. Clamen first joined the Commission in 1976 and, after a period as a private consultant, returned in 1983. Mr. Bailey was loaned to the Commission by Environment Canada in 1984. Dr. Hamilton joined the IJC staff in 1979 following ten years with the federal Freshwater Institute as a scientist and research manager, and two years as an environmental advisor with the Atomic Energy Board.

Joan Campbell, who transferred to the IJC from the National Museums Corporation staff in 1981, is Secretary to the Legal, Socio-Economic and Research Advisors. **Michael Vechsler**, formerly with the Department of External Affairs for most of his career, began his IJC work in 1984. **Geoffrey Thornburn** has been the Economics Advisor since 1977 and previously held several positions in Environment Canada. **Rudy Koop** has been Research Officer since 1976 when he too transferred from Environment Canada. **Jim Houston** became a term employee during 1986 to help with our computerization project.

Ottawa's Public Information Officer is **Walter Sargent**, with the Commission since 1975 and presently on leave. **Alan Clarke** recently rejoined the Commission in a consulting capacity, and had been on loan to the IJC in 1982-83. **Beverley Desjardins** has served as secretary to this office and receptionist since 1976.

The administration of the office is an important activity. **Peter Meloche**, the Finance Officer, administers financial and material management functions. He joined the Commission staff in 1976 from the Privy Council Office. **Robert Mainville**, in charge of Records Office, transferred from the Department of National Defence in 1976. **Maurice Duval**, who works in the mail room, arrived in 1974 from the Department of National Health and Welfare.

Last, but certainly not least, **Carole Cyr** is secretary to the Chairman. She is a central figure in the office since, among her other administrative duties, she distributes the pay cheques. She transferred from the Privy Council Office in 1985.

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FOCUS
On International Joint Commission Activities

IJC Great Lakes Regional Office
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BOOKSHELF

Michael Keating explores the major issues concerning water quality and quantity in Canada and the world in his latest book, *To the Last Drop*. Acid rain, toxic contamination and storage of hazardous substances, water shortages in the western United States and other major concerns are outlined in the book, and several solutions are offered. Keating, an environmental reporter for the Toronto *Globe and Mail*, has received awards from the Canadian Science Writers' Association, the Canadian Meteorological and Oceanographic Society and the silver medal in 1984 from the United Nations Environmental Program. The book is available in all major Canadian bookstores or, for U.S. citizens, contact Macmillan of Canada, 29 Birch Avenue, Toronto, ON M4V 1E2. (416) 963-8830.

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Lewis Publishers has produced several environmental books in 1985. Most recent publications include: *Artificial Reefs*, edited by Frank M. D'Itri; *Petroleum Spills in the Marine Environment*, by James R. Payne and Charles R. Phillips; *Coastal Wetlands*, edited by Harold H. Prince and Frank M. D'Itri; *Environmental Impact of Water Resources Projects*, by Larry Carter; and *Marine and Estuarine Geochemistry*, edited by A.C. Sigleo and A. Hattori. Prices for each book range from $34 to $49.95 and can be purchased from Lewis Publishers, Inc., 121 South Main Street, P.O. Box 519, Chelsea, MI 48118 or call (313) 475-8619. In Canada, the same books can be purchased from John Wiley & Sons Canada, Ltd., 22 Worcester Road, Rexdale, ON M9W 1L1. (416) 675-3580.

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The Bureau of National Affairs, Inc. has released a special report that covers the development and enactment of the US Safe Drinking Water Act Amendments of 1986. The 121-page volume details the provisions of the amendments, the legislative history, US EPA plans to carry out the amendments and the effect on drinking water utilities. *The Safe Drinking Water Act Amendments of 1986* is available for $35 from The Bureau of National Affairs, Inc., Customer Service, 9435 Key West Avenue, Rockville, MD 20850. (301) 258-1033. Discounts are available for multiple orders.

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Consumers can now identify, use and dispose of common household toxic substances more effectively, thanks to the *Michigan Household Hazardous Substance Handbook*. The book provides an overview of the household hazardous substances problem, product toxicity, possible alternatives to disposal, a directory for more information and updates on contents. Although the handbook is titled for a particular state, much of the material is applicable to elsewhere in the United States and Canada. Copies are available for $15 from the Ecology Center of Ann Arbor, 417 Detroit Street, Ann Arbor, MI 48104. (313) 761-3186. Discounts are available for orders of 25 or more.

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The *Field Manual for Water Quality Monitoring* combines a learner-centered and interdisciplinary instructional model with the Water Quality Index, developed by the National Sanitation Foundation, to provide readers with a comprehensive approach to understanding water quality. Results from nine parameters are used to calculate an overall water quality index, which can be used to monitor water quality over time. Written by Mark K. Mitchell and William B. Stapp, the Manual has been used extensively by upper elementary, secondary and university students. It is available through William B. Stapp, 2050 Delaware, Ann Arbor, MI 48103 for $6.80 postpaid. Discounts are available for 10 or more copies.

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As a result of a two-year study sponsored by the University of Wisconsin Sea Grant Institute, Ronald Heilmann, Harold Mayer and Eric Schenker have coauthored *Great Lakes Transportation in the Eighties*. The report presents a comprehensive view of the Great Lakes-St. Lawrence Seaway transportation system by examining the shipping industry, recent changes in the region's economy, how these changes have affected the flow of major commodities shipped on the lakes and the seaway, and how new shipping technology has affected the system's ability to compete with other inland transportation systems. Several recommendations are given to resolve issues that have developed as a result of these changes. Copies are available for $8.00 from Communications Office, Sea Grant Institute, University of Wisconsin, 1880 University Avenue, Madison, WI 53705. (608) 263-3259.

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Managing the Legacy is the title for proceedings of a Colloquium on the Environment held in December 1985 and sponsored by the Economic Council of Canada. Topics presented include freshwater issues, forest and wildlife management, environmental preservation and economic growth, international perspectives, and management and disposal of toxic wastes. Address orders to Canadian Government Publishing Centre, Ottawa, Canada K1A 0S9. (819) 997-2560. Prices are $9.95 (Canada) and $11.95 (all other countries).

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